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ABSTRACT

The purpose of this study was to investigate the effects of competition on learning motivation among Chinese students in a classroom setting. The participants (N=52) were 7th-grade students from 2 Hong Kong secondary schools in a middle-lower class neighborhood. The students were randomly assigned to either competitive or non-competitive conditions in a 2-hour Chinese typewriting course. Their goal orientation, performance, task enjoyment, achievement attribution, test anxiety, and self-evaluation after failure were measured during the course. Compared to their counterparts in non-competitive conditions, students in competitive conditions had better performance for easy tasks. However, they were more performance-oriented and more likely to sacrifice learning opportunities for better performance. They were also prone to having more negative self-evaluations after failure. Although there were no statistically significant differences between the two groups of students in task enjoyment, achievement attribution, and test anxiety, the direction of the differences was consistently unfavorable for students in competitive conditions. The findings of the present study were primarily consistent with the predictions of goal theory in achievement motivation. Competitiveness induces performance goals and a more negative self-evaluation after failure for Chinese students in a classroom setting than it would for Western students in a laboratory setting. (Contains 1 figure, 2 tables, and 25 references.) (Author/JDM)

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The Effects of Classroom Competition on Achievement Motivation

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The Effects of Classroom Competition on Achievement Motivation

Abstract

The purpose of the study was to investigate the effects of competition on learning motivation among Chinese student in a classroom setting. The participants were 52 students of grade 7 from two Hong Kong secondary schools in a middle-lower class neighbourhood. The students were randomly assigned to either competitive or non-competitive conditions in a 2-hour Chinese typewriting course. Their goal orientation, performance, task enjoyment, achievement attribution, test anxiety, and self-evaluation after failure were measured during the course. Compared to their counterparts in non-competitive condition, students in competitive condition had better performance for easy tasks. However, they were more performance-oriented and more likely to sacrifice learning opportunities for better performance. They were also prone to have more negative self-evaluation after failure. Although there were no statistically significant differences between the two groups of students in task enjoyment, achievement attribution, and test anxiety, the direction of the differences was consistently unfavourable to students in competitive condition. The findings of the present study were primarily consistent with the predictions of goal theory in achievement motivation. Competitiveness induces performance goal and more negative self-evaluation after failure among Chinese students in classroom as what would happen to Western students in laboratory.

As children move from primary to secondary schools, they more often than not find themselves in a classroom environment that is obviously more competitive than what they used to have in primary schools (Harter, 1996; Midgely, Anderson, & Hicks, 1995; Ruble, 1983). While some educators argue that competition plays a vital role in creating work-oriented norms and thus improves achievement by enhancing the motivation of students, many more educators point out that competitive classrooms have less favourable effects on learning and motivation, especially among less able students (Glasser, 1969, Holt, 1964, 1969; Silberman, 1971). The increase of competitiveness in classroom environment in the transition to secondary schools is found to be associated with a negative change in motivational orientation and a decline in academic performance for some children (Eccles & Midgley, 1989).

Competitive classroom environment is prone to induce performance goal instead of learning goal among students (Ames & Ames, 1984). When competition is highlighted, students are pressured to focus on the demonstration of their competence relative to others'. They are induced to seek positive evaluations of their abilities and avoid negatives ones. In contrast, when students are not under the pressure of competition, chances for them to adopt learning goal are higher. With learning goal, students focus on the development of competence and task mastery instead. Dweck (1986) postulates that performance and learning goals generate two different behaviour patterns. The difference is most salient when students have low confidence or face a setback (Deiner & Dweck, 1978). To avoid negative judgment of their competence, performance-oriented students will avoid challenge when their confidence is low. In contrast, learning-oriented students remain vigorous and persistent in the face of obstacles regardless of their level of confidence. As they aim at developing competence

and task mastery, they see obstacles as a natural part of the learning process and pay less attention to negative evaluation of their abilities.

Other than generating a helpless pattern in response to failure, competition also undermines intrinsic motivation (Butler, 1989a; Bulter & Kedar, 1990; Vallerand, Guavin, & Halliwell, 1986). Competition and other extrinsic incentives alike promote the perception that activity is a means to some other end, rather than an end in itself. In a competitive environment, attention is focused on the ends of winning and demonstrating high ability rather than on intrinsic enjoyment of the task. As a result, competition is associated with lower interest in the task, especially when the competition is not won (Vallerand et al., 1986).

Within a competitive system of motivation, students focus on their ability to win or outperform others. Their self-perception of ability becomes a function of how they perform relative to others. Self-evaluations of ability thus fluctuate with the outcome. They evaluate their ability as high after winning but as low after losing. Ames (1984) argues that competition increases the salience of ability as a factor that differentiates winners and losers. In a study comparing competitive and individualistic goal structures, Ames (1984) found that children made more ability attributions in the competitive than in the individual condition. Attribution theory suggests that ones' explanation for success and failure is influential in determining whether or not one continues to make effort to pursue valued outcomes (Weiner, 1974). If students believe that ability is not something they can change and the outcomes of their study are attributed to ability, they will be less likely to work hard on their study.

Once the failure is viewed as indicating low ability, students feel anxious or upset when they come across difficulties or setbacks. Students with a performance goal orientation are vulnerable to the emotional concomitants of the helpless behaviour

pattern (Handerson & Dweck, 1990). Ames and Ames (1984) argue that failure has more negative consequences for students' self-esteem in competitive settings than in non-competitive settings. When students are anxious and upset in the face of setbacks, it is likely that their performance will fall apart. In a series of studies, Mueller and Dweck (1998) induced performance goal and learning goal in two groups of students by praising ability or effort. They found that performance-oriented students, compared to learning oriented students, suffered from greater deterioration of performance after failure.

A review of past research reveals a consistent finding that competition induces performance goal and renders less favourable effects to learning and motivation. However, the studies on the effects of competition were mostly conducted in laboratories (e.g. Ames, 1984; Butler & Kedar, 1990; Harackeiwicz & Elliot, 1993; Vallerand, Gauvin, & Halliwell, 1986). The experimental tasks like puzzles and pinball games were not related to authentic learning in school. Although these tightly controlled experiments had high internal validity, their external validity is queried by frontline educators. Sceptics have reasons to wonder if the effects obtained in a laboratory will happen in a real classroom where real teaching and learning are taking place. In contrast to laboratory study, research conducted in natural field settings have greater external validity (e.g. Covington & Omelich, 1984; Bergin, 1995). However, field study usually does not have the tight experimental controls for internal validity as those in laboratory study. In view of this situation, we conducted a study on effects of competition with tight experimental controls in a classroom setting. We hope that this study can maximize both the internal and external validities of the results.

Another query about the results of past research concerns their generalisability into a broader sociocultural population. Murphy and Alexander (2000) reviewed the motivation literature associated with the study of academic achievement and found that

most of the studies represented a Western philosophical orientation. They argue that there is a reason for us to pause and to reflect on whether the conclusions and implications that educators draw from this literature can be generalised to other cultures. One objective of our study is to address this concern. Our study is primarily based on the goal theory of achievement motivation developed in the West (Dweck, 1986; Ames and Ames, 1984). However, we would like to see if the same psychological mechanism is applicable to Chinese students in Hong Kong.

In the present study, we investigated the effects of competition on students' achievement motivation in a classroom setting. We expected that students in the competitive condition would endorse performance goal more than their counterparts in the non-competitive condition. They would also make more ability attribution, have less enjoyment but more test anxiety after failure. We also expected that they would have less self-efficacy on subsequent test and less positive self-evaluation after failure. Their performance would deteriorate after failure as well. However, these differences would not be distinct before they came across any setback.

Methods

Participants

The participants were 52 students of grade 7 who took a 2-hour Chinese typewriting course. They were recruited from two Hong Kong secondary schools in a middle-lower class neighbourhood. Half of them were male.

Screening

One month before the course, a screening questionnaire was administered to all the 7th graders in the two schools (n = 380). The students were asked to indicate if they were interested in taking a 2-hour Chinese typewriting course and if they had learned Chinese typewriting before. They were also requested to indicate their familiarity with the keyboard and the results of their last Chinese Language examination. Students who indicated that they were not interested in the course or had learned Chinese typewriting before were excluded from the study. Those who indicated that they did not know the position of any letter on the keyboard or could type without looking at the keyboard were also excluded. To further minimize the heterogeneity of Chinese typewriting skills among the participants before they took the course, the students whose marks fell below 49 or above 90 in their last Chinese Language examination were also excluded. After the screening, only 108 students were invited to take the course on a Saturday morning in a time slot for extra-curricular activities. Invitation letters were sent to their homes for parental consent. Parents were informed that during the course the students would learn elementary Chinese typewriting skills and we would study how different teaching methods might affect their learning and motivation. As a result, 62 students returned their parental consent forms and indicated that they would like to participate in the course.

Experimental Design.

The 62 students were randomly assigned into 4 classes of approximately 15 students. There were two classes in each school. One class was assigned to the competitive condition and the other the non-competitive condition. The sequence of instructions and the instructor of the 2-hour course was the same for both conditions. The only difference lied in the evaluation method: one was competitive and the other

was non-competitive. The students in the competitive condition were told that they would be each issued a certificate of attendance at the end of the course. Their names and their relative ranking of performance in the class would be printed on the certificates. They were told that the performance of all students in their group would be ranked from the best to the worst according to their results in the three tests during the course. In contrast, the students in the non-competitive condition were only told that they would be each issued a certificate of attendance at the end of the course. Their relative ranking in the group was not mentioned.

Chinese Typewriting Course

The course was held in the computer classrooms of the two schools. The instructor was a psychology postgraduate student who was well versed in Chinese typewriting. She was assisted by two teaching assistants who helped passing handouts and monitoring the procedure. Upon arrival in the classroom, each student was assigned to a desktop computer in a carrel. Each computer was installed with a program especially designed for this experiment. The program presented Chinese typewriting exercises and tests to the students and recorded their responses. Authentic teaching and learning took place in the course. The students were expected to master the basic decoding method of elementary Chinese typewriting. With the help of a list of codes, they could accurately type the commonly used Chinese characters in computer word processing after they had attended the course.

Procedures

During the course, the students went through two 30-minute instruction sessions, each followed by an exercise and a test. At the end of the course, the students were also

asked to take a final test. In the first instruction session, the instructor presented the basic Chinese typewriting techniques. The students learnt how to decode Chinese characters with simple codes in word processing. For example, to type the character "明", the students learned to combine the key "A" which is coded for "日" and the key "B" which is coded for "月." After the first instruction session, the students were asked to work on Exercise 1. This exercise consisted of 20 Chinese characters that appeared on the screen sequentially. The students were given 30 seconds to decode and key in each character. Within the time constraint, they could have as many attempts as they wanted. After each attempt, the computer prompted a dialogue box notifying the students if it was correct or not. If the answer was correct, the computer would display "Correct answer, please proceed to the next character." Then, a new character would appear on the screen. If the answer was incorrect, the computer would display "Incorrect answer, please try again." If the students could not decode the character within the time limit, the computer would display "Time is up, the correct answer is key X and key Y, please proceed to the next character."

After Exercise 1, the students were given Test 1 on the screen. Test 1 consisted of 12 Chinese characters. As in Exercise 1, the students were given 30 seconds for unlimited number of attempts to decode each character. They were also notified when an attempt was correct. However, they were not informed of the correct answer immediately when they could not decode the character within the time limit. At the end of Test 1, the computer displayed the number of their correct attempts and then the correct answer of each character sequentially. We manipulated the difficulty levels of both Exercise 1 and Test 1, making them relatively easy for beginners. After this successful experience, the students were asked to respond to a series of questions on the screen. These questions tapped their enjoyment of learning, attribution of test result, and

self-efficacy on the next test. Manipulation items were also included to see if they were satisfied with their performance and if they believed that the test result reflected their current level of Chinese typewriting skills.

After the students had completed these measures, the instructor started the second instruction session in which more advanced decoding rules with exceptions and variations were introduced. For example, the key "F" can be a code for "火" as well as for "小." The second instruction session was followed by Exercise 2 and Test 2. The formats of these exercise and test were the same as those of the previous exercise and test. However, they were more difficult and the students would experience failure for most of the tasks presented to them. After this failure experience, the students were also asked to respond to a series of questions on the screen. Other than the manipulation check items and the questions tapping the students' enjoyment of learning, attribution of test result, and self-efficacy on the next test, this series of questions also included some that tapped the students' choice of the final test, test anxiety, and self-evaluation after the failure.

The students were asked to take a final test according to their choice of difficulty level. Before they took the final test, they were allowed to take a mock test to prepare for the final test. They were told that the mock test consisted of 12 items, half of them were difficult and half were easy. The mock test was used to measure the students' performance after the failure experience. The final test was not used lest the students found that difficulty level of the final test was different from their choice if we used the same final test for all the students. After they completed the mock test, the students were asked to fill out a course evaluation form assessing the discipline and competitiveness of the class, clarity, lucidity, and pace of the instruction. These items served as the checks for the manipulation of the two conditions.

After the students completed the course evaluation form, we told them that there was no final test. We debriefed them of the purposes of the study and thanked them for their participation. We told the students in the competitive condition that ranking was less important than mastery of new skills. In both conditions, certificates of attendance with no information of ranking were presented to the students. All the students were told that Exercise 2 and Test 2 were very difficult and beginners were not expected to do well. They were told, however, the difficult items were not insurmountable if they continued with their practices at home. List of code and instruction notes on Chinese typewriting were distributed to the students before the class was dismissed.

Measures

Manipulation checks. In the course evaluation form, the students were asked to indicate the extent of their agreement to the following statements: 1) the discipline of the class was good; 2) the class was competitive; 3) the procedures of the course were clear; 4) the instructions were lucid; and 5) the teaching was easy to understand. The ratings were made on a four-point scale with 1 for "strongly disagree" and 4 for "strongly agree." The students were also asked to evaluate the pace of the teaching on a 5-point scale with 1 for "too slow" and 5 for "too fast." To check if Test 1 was easy and Test 2 was difficult as we intended, the students were asked to indicate after both tests their satisfaction of their test results and how much they thought that the test results could accurately reflect the current level of their Chinese typewriting skills. The ratings were made on a 6-point scale. For the satisfaction item, 1 was "very dissatisfied" and 6 was "very satisfied." For the accurate reflection item, 1 was "could not at all" and 6 was "very much could."

Goal orientation. The goal orientation of the students after failure experience was measured by the their choice of final test. Immediately after test 2, the students were offered two options for their final test: Test A and Test B. They were told that the level of Test A was similar to that of Test 1, they would manage most of the questions and get good results whereas the level of Test B was similar to that of Test 2, they might not be able to master most of the questions but they would learn more ways to decode difficult characters. Test A was a choice of performance goal orientation as it focused on good performance instead of learning. Test B was a choice of learning goal orientation as it aimed at mastery of new skills even at the price of poor performance.

Performance. The students' performance on Chinese typewriting was measured by the results of Test 1, Test 2, and the mock test. Since the mock test consisted of both difficult and easy tasks, separate results were obtained for these two types of tasks.

Enjoyment. After both Test 1 and Test 2, the students were asked to indicate how they perceived the immediate past learning experience. The ratings were made on a 6-point scale with 1 for "very unpleasant" and 6 for "very pleasant."

Achievement attribution. After both Test 1 and Test 2, the students were asked what primary factor(s) had contributed to their performance in the test they just took. They were asked to indicate their answer on a 7-point scale with 1 for "It primarily depended on my learning ability," 4 for "It depended on both my learning ability and effort " and 7 for "It primarily depends on my effort." A low score indicated attribution to ability and a high score indicated attribution to effort.

Self-efficacy on subsequent test. After Test 1, and again after Test 2, the students were asked how much they were sure that they would get good results in the next test. The ratings were made on a 6-point scale with 1 for "not sure at all" and 6 "very sure."

Test anxiety. After Test 2, the students were asked how much they were anxious about the final test on a 6-point scale with 1 for "not anxious at all" and 6 for "very anxious."

Self-evaluation after failure. After Test 2, the students were presented with 4 sets of questions on self-evaluation related to the results of Test 2. Each set of questions consisted of two parts modelled after the format of Self-confidence Scale developed by Henderson and Dweck (1989). In the first part, two statements were presented (1. I am quite a failure vs. I am quite successful; 2. I am not smart vs. I am quite smart, 3. I am dumber than my classmates vs. I am smarter than my classmates; 4. I am a person with poor eye-hand coordination vs. I am a person with prompt eye-hand coordination). In this part, the students were asked to indicate which statements of the pair could best describe them. In the second part, the students were asked to rate how accurate statement they just chose was for them. The ratings were made on a 3-point scale with 1 for "some what accurate," 2 for "accurate" and 3 for "very accurate." To combine the two parts, we obtain a single score for each set of questions on a unidimensional scale of 6 points. The score indicated the opinions of the students regarding the two statements on a 6-point scale with one statement at each extremity of the scale. For example, a score of 1 in the first set of questions indicates that a student thought that the statement "I am quite a failure" described him/her very accurately. Whereas a score of 6 in the first set of questions indicates that a student thought that the statement "I am quite successful" described him/her very accurately. We obtained 4 scores for the 4 sets of questions. The alpha coefficient of the 4 scores was .78 in our sample. We averaged the 4 scores and obtained a single index of self-evaluation after failure. Low score indicated poor evaluation of oneself whereas high score indicated high evaluation of oneself.

Results

Manipulation Checks

We compared the course evaluation done by the students in the two conditions and found that the ratings were not significantly different for all the evaluation items except one – the competitiveness of the class. Compared to their counterparts in the non-competitive condition ($\overline{X}$ = 2.0, SD = .67), the students in the competitive condition ($\overline{X}$ = 2.5, SD = .84) tended to rate their class more competitive (t = 2.41, df = 60, p < .05, Cohen's d = 0.44). Other than that, the two groups did not differ significantly in their ratings on discipline of the class, clarity of the procedure, lucidity of the instruction, and difficulty level and pace of the teaching. The analysis of the course evaluation indicates that the instillation of competitiveness was successful in the competitive condition. It also excludes the explanation that differences between the two conditions in goal orientation and other dependent variables were due to the differences in the quality of instruction.

To ensure that Test 1 produced successful experience and Test 2 produced failure experience to the students, we only included the students who obtained at least 7 correct answers out of the 12 questions in Test 1 and obtained no more than 6 correct answers in Test 2. Fifty-two (84%) of the participants met these criteria and were included in the subsequent analyses. The test results of these students in Test 1 ranged from 7 to 12 with $\overline{X}$ = 10.13 and SD = 1.27. In contrast, their results in Test 2 ranged from 2 to 6 with $\overline{X}$ = 4.52 and SD = 1.09. Their satisfaction with test results dropped from 4.60 in Test 1 to 2.42 in Test 2 (t = 10.24, df = 50, p < .01). Despite the drastic drop in their test results and satisfaction from Test 1 to Test 2, the students still regarded both test results as accurate in reflecting their performance level in Chinese typewriting. The means of

their ratings on the accuracy were 4.73 and 4.25 on a 6-point scale for Test 1 and Test 2 respectively. Both ratings were higher than the mid point of 3.5. These results indicate that the difficulty levels of the tests were successfully manipulated and the students did not doubt their test results.

Goal Orientation

Students' goal orientation was measured by their choice of the final test. In the competitive condition, 25 (92%) of the 27 students chose Test A, the easy test that could protect their ego but helped them little in learning (see Figure 1). In contrast, only 11 (44%) of the 25 students in the non-competitive condition made such a choice. The majority of them still opted for a more challenging task in spite of the failure experience. As predicted, the choices were significantly different between the two conditions (X^2 = 14.389, $df = 1$, $p < 0.01$). The students in the competitive condition tended to sacrifice the learning opportunity in order to assure good performance. On the other hand, more students in the non-competitive condition valued the opportunity of mastering new skills and were not threatened by the possibility of poor performance.

(Insert Figure 1 about here)

Performance

Students' performance was measured by the number of accurate answers in Test 1, Test 2, and the mock test. Since half of the questions in the mock test were easy and half were difficult, separate results were reported for the difficult and the easy tasks. Table 1 presents the results in these three tests. As predicted, there was no significant difference between the students in the competitive and non-competitive conditions in both Test 1

and Test 2. However, we did not observe deterioration of performance in the competitive condition after failure. For the mock test, there was no difference between the two groups in the difficult tasks. Contradictory to our expectation, the students in the competitive condition performed better than their counterparts in non-competitive condition in the easy tasks of the mock test ($t = 2.82$; $df = 50$, $p<0.01$, Cohen's $d = 0.55$).

(Insert Table 1 about here.)

Enjoyment

The students' ratings on enjoyment of their learning experience are presented in Table 2. As predicted, the results of t tests revealed no significant difference between the two conditions in enjoyment after the success in Test 1 ($t = -1.28$, $df = 50$, $p > .05$, Cohen's $d = -.25$). However, no statistically significant difference was found between the two groups in enjoyment after failure in Test 2 ($t = -1.52$, $df = 50$, $p > .05$, Cohen's $d = -0.30$).

(Insert Table 2 about here.)

Achievement Attribution

As expected, there was no significant difference between the two groups in achievement attribution of results for Test 1 ($t = 0.321$, $df = 50$, $p > .05$, Cohen's $d = 0.06$). However, the two groups were also not significantly different in this measure for Test 2 after failure ($t = -1.128$, $df = 50$, $p < .05$, Cohen's $d = -0.22$).

Self-efficacy on Subsequent Test

With reference to Table 2, there was no significant difference between the two conditions in self-efficacy on the subsequent test after the success in Test 1 ($t = -1.34$, $df = 50$, $p > .05$, Cohen's $d = -0.26$). In contrast, there was a difference of marginal significance between the two conditions in self-efficacy after the failure in Test 2 ($t = -1.789$, $df = 50$, $p = 0.8$, Cohen's $d = -0.35$). The effect size of the difference was also considerable.

Test Anxiety

Although the rating of the competitive group was slightly higher than that of the non-competitive group (see Table 2), there was no statistically significant difference between the two groups in test anxiety ($t = .75$, $df = 50$, $p > .05$, Cohen's $d = .15$). The effect size of difference was also small.

Self-evaluation after Failure

As predicted, there was a significant difference in self-evaluation after failure between the competitive and non-competitive groups ($t = -2.20$, $df = 50$, $p < .05$, Cohen's $d = -0.43$). The students in the competitive condition had more negative self-evaluation ($\overline{X} = 2.45$, SD = 0.93) than did their counterparts in the non-competitive condition ($\overline{X} = 2.98$, SD = 0.78).

Discussion

As we had hypothesized, the students in the competitive condition were more likely to opt for an easy test than their counterparts in the non-competitive condition after

setback. The results indicate that competitiveness induced performance goal among the students. Under the pressure to outperform others in the class, they were willing to avoid challenge and sacrifice learning opportunity when they had encountered a setback. We also found that after failure they had lower self-efficacy on subsequent test and more negative self-evaluation than the students in the non-competitive condition. Although the t tests did not indicate a statistically significant difference between the two groups in the after-failure measures of enjoyment and attribution, the direction of the difference was consistent with our expectation. The competitive group fared worse than the non-competitive group in these measures. The effect size ranged from -.22 to -.30. It is noteworthy that there was no significant difference between the two groups in test anxiety. This may be an artifact of the experimental design since the students responded to this item after they had indicated their choice of final test. As over 90% of the students in the competitive condition chose the easy test, their test anxiety would be ameliorated.

Contradictory to our expectation, we did not observe a distinct deterioration in the competitive group after failure. In contrast, we found that the competitive group performed better than the non-competitive group in the easy tasks in the mock test. We could not replicate the results of Muller and Dweck's study (1998). However, our findings were consistent with the general findings in the literature of social facilitation. In his classic studies on social facilitation, Zajonc (1965, 1980) found that the presence of others increased arousal, which affected performance in different ways depending in the task at hand. For an easy task, individuals tended to perform better then usual when others were present. However, when the task was difficult, complex, or unfamiliar, they tended to perform worse than usual when others were present. Zajonc's findings were replicated by other researchers who found that competition increased productivity in rote

or speed tasks but undermined performance in problem-solving or creative tasks (Amabile, 1983; Butler, 1989b; Clifford, 1972). In our study, the competitive group performed better in the easy tasks but slightly worse on the difficult tasks than the non-competitive group. The competitive group got 1.26 answers right in the difficult tasks but the non-competitive group got 1.6. Although the t test did not show significant difference and the effect size was small, the direction was consistent with the general findings in the literature of social facilitation.

Although competition may facilitate performance in easy tasks, its merits in this respect do not make up for its negative consequences in achievement motivation. In competition, students seek positive judgment of competence by outperforming others. To achieve this end, they may avoid challenge when they are not sure of winning. Withdrawing effort from difficult task can protect one's self-worth. It may be adaptive in the short term. However, in the long run, it is maladaptive because the habit of routinely withdrawing effort when challenged may deprive one's opportunity to learn new things and to improve one's competence. Further to this, given the same experience of failure, students in competitive learning environment tend to evaluate themselves more negatively.

The findings of the present study were primarily consistent with the predictions of goal theory in achievement motivation (Dweck, 1986). It is shown that goal theory, although developed in the West, can be generalised to Chinese students in Hong Kong. The implications drawn from the theory are not irrelevant to Chinese societies. The negative effects of competition demonstrated in the present study were poignant in view of the fact that Hong Kong schools are known for their competitiveness. Schools in Hong Kong are found to be increasingly competitive when students move up along academic stages (Lam, Pak, & Ma, 2001). It is a common practice for schools in Hong

Kong to report students' relative ranking of examination results in report cards. The results of the present study serve as a good trigger for reflection among Hong Kong educators on this common practice.

However, we do not argue that Chinese and Westerners are the same in every aspect of motivation predicted by the goal theory. At most we can only say that competitiveness induces performance goal and more negative self-evaluation after failure in Chinese as it does in Westerners. Our study has not investigated the psychological mechanisms that may be significant in cultural difference. For example, social goal may be more essential to Chinese than to Westerners, and may play a special role in achievement motivation in the Chinese culture. Tao and Hong (2000) found that the endorsement of performance goal was positively correlated with socially oriented achievement motivation in Chinese college students. To find out what aspects of goal theory can or cannot be generalized into Chinese societies, more research is needed. With more knowledge accumulated in this respect, we shall know what psychological mechanisms in the goal theory are shared or not shared by Westerners and Chinese.

The present study was an attempt to introduce tight experimental controls to field settings. The results are useful to frontline educators, who are concerned of ecological validity of research in teaching practices. The Chinese typewriting course was a 2-hour course and should not have long-term effects on the students. However, the present study did demonstrate how competition affects students immediately in a short instruction session. We have reasons to speculate that if competitive measures are adopted in classroom on a daily basis as what is commonly practised in Hong Kong, there will be long-term detrimental effects on students.

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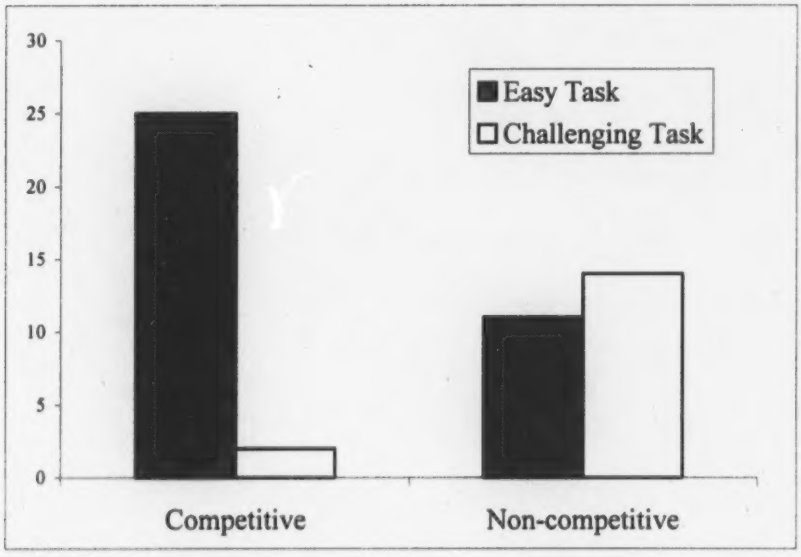

Figure 1. Task choice of the students in competitive and non-competitive conditions for the final test.

Table 1

Means and Standard Deviations of the Number of Correct Answers

	Conditions		t value	Cohen's d
	Competitive n=27	Non-competitive n = 25		
Test 1	10.22 (1.25)	10.04 (1.31)	0.51	0.10
Test 2	4.52 (0.98)	4.52 (1.23)	-0.01	0.00
Mock test				
Easy tasks	5.56[a] (0.58)	5.04[a] (0.74)	2.82	0.55
Difficult tasks	1.26 (1.23)	1.60 (1.00)	-1.09	-0.21

Note. The numbers in the parentheses are standard deviations. The means sharing the same superscripts are different from each other at .05 level.

Table 2
Means and Standard Deviations of Task Enjoyment, Self-efficacy, Achievement Attribution, Test Anxiety, and Self-evaluation

Measures	Conditions		t value	Cohen's d
	Competitive n = 27	Non-competitive n= 25		
Enjoyment				
After success in Test 1	4.37 (0.97)	4.68 (0.75)	-1.28	-0.25
After failure in Test 2	3.81 (1.24)	4.28 (0.94)	-1.52	-0.30
Achievement attribution				
After success in Test 1	4.00 (1.86)	3.84 (1.72)	0.32	0.06
After failure in Test 2	3.44 (1.70)	3.96 (1.59)	-1.13	-0.22
Self-efficacy on subsequent test				
After success in Test 1	4.37 (1.39)	4.84 (1.11)	-1.34	-0.26
After failure in Test 2	3.52* (1.28)	4.12* (1.13)	-1.79	-0.35
Test anxiety	4.11 (1.48)	3.80 (1.50)	0.75	0.15
Self-evaluation	2.45[a] (0.93)	2.98[a] (0.78)	-2.20	-0.43

Note. The numbers in the parentheses are standard deviations. The means sharing the same superscripts are different from each other at .05 level. * The two means were different at a marginal level of significance, $p = .08$.